



## Vermont Legislative Research Service

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### Electronic Legislative Voting Systems

This is a report about current electronic roll call systems in state legislatures in response to H.545, “An act relating to the implementation of an electronic roll-call system in the Vermont House of Representatives,”<sup>1</sup> a bill was proposed by Representative James Harrison (R-Rutland-Windsor-1) in January 2018.<sup>2</sup>

Today, many state legislatures have upgraded from a manual to electronic roll call process. The first state electronic roll call system was implemented by the Wisconsin General Assembly in 1917.<sup>3</sup> As of 1996, the National Conference of State Legislatures (NCSL) reported that approximately two-thirds of state legislatures, as well as the U.S. Congress, use electronic systems for roll call votes.<sup>4</sup> The NCSL’s 2014 survey reported that the adoption of electronic roll call systems has continued in other state legislatures.<sup>5</sup>

### Vermont’s Legislative Voting System

In the Vermont House of Representatives proceedings are decided by a voice vote, division of the House, roll call, and a vote by ballot for the purpose of elections (i.e., election of the Speaker).<sup>6</sup> In a voice vote, members respond collectively by saying “yea” or “nay.” The Speaker determines whether the “yeas” or “nays” have the majority. In a division, which can be called by any House member, members vote yes by standing.<sup>7</sup> A roll call can proceed at the demand of five members, with votes recorded alphabetically.<sup>8</sup> In the Vermont House, during a roll call the Clerk calls the

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<sup>1</sup> “H.545: An act relating to Implementation of an Electronic Roll-Call System in the Vermont House of Representatives,” Vermont General Assembly, 2018, <https://legislature.vermont.gov/bill/status/2018/H.545>.

<sup>2</sup> Vermont General Assembly, “H.545.”

<sup>3</sup> Brenda Erickson, “Roll Call Voting Machines and Practices,” in *Inside the Legislative Process* (Washington, D.C.: National Conference of State Legislatures, 1996) 19-37, <http://www.ncsl.org/documents/legismgt/ILP/96Tab5Pt3.pdf>.

<sup>4</sup> Erickson, “Roll Call Voting Machines and Practices,” 19-37.

<sup>5</sup> Brenda Erickson, “Survey on Voting Machines and Their Use,” in *Inside the Legislative Process* (Washington, D.C.: National Conference of State Legislatures, 2014) 1-67.

<sup>6</sup> “Rules and Orders of the House of Representatives”, State of Vermont, (amended April 12, 2017), 4, accessed February 19, 2018, <https://legislature.vermont.gov/assets/Rules/house-rules-11-29-2017>.

<sup>7</sup> Vermont, “Rules and Orders of the House of Representatives”, 18; National Conference of State Legislatures, *Mason’s Manual of Legislative Procedure*, 2010 ed., (Eagan, MN: West Publishing, 2010), 366.

<sup>8</sup> Vermont, “Rules and Orders of the House of Representatives.”

name of each member and manually records an affirmative or negative response. This process is repeated to account for any members who were absent during the first reading of the roll call. Votes are then tallied and recorded in the House Journal.<sup>9</sup> After a roll call vote is completed, members can choose to provide a brief oral explanation of their vote.<sup>10</sup>

### **Cost of Vermont's Legislative Voting System**

To assess costs associated with an installation of an electronic roll call system, the following cost-benefit analysis was conducted. This analysis determined the total amount of time dedicated to legislative roll calls per legislative year (the five months the legislature is in session each calendar year), which was then compared to the operating costs of the State House during the legislative year. This cost-benefit analysis was requested by both Representative Dylan Giambatista (D-Chittenden-8-2) and Representative James Harrison (R-Rutland-Windsor-1) with the goal of understanding both the time spent per legislative year on roll call votes and the costs currently associated with them.

On average, there are 65 to 70 roll calls in the Vermont House of Representatives each legislative year.<sup>11</sup> Each roll call takes approximately 15 minutes to complete.<sup>12</sup>

According to Daniel Dickerson of the Vermont Joint Fiscal Office, the cost of one legislative day, including legislative salaries, legislator per diem expenses, session staff salaries, and other expenses, is approximately \$60,000.00.<sup>13</sup> This does not include full-time staff salaries. It also does not include the building maintenance and operating costs that exist regardless of whether the legislature is in session.

By assuming an average of 67.5 roll calls per legislative year, the cost of Vermont's current roll call system was calculated:

$$\begin{aligned} 67.5 \text{ Roll Calls} \times 15 \text{ Minutes per Roll Call} \\ = 16.88 \text{ Hours Spent per Legislative Year on Roll Call Votes} \end{aligned}$$

$$\begin{aligned} 16.875 \text{ Hours} / 8 \text{ Hours per Legislative Day} \\ = 2.11 \text{ Days per Legislative Year Spent on Roll Calls} \end{aligned}$$

$$2.11 \text{ Days} \times \$60,000 \text{ per Day} = \$126,600 \text{ Spent on Roll Calls per Legislative Year}$$

The Vermont House of Representatives spends a time equivalent of just over two days per session conducting roll calls. The cost of conducting these roll calls is approximately \$126,600 per legislative year. When assessing the feasibility and benefits of electronic roll call systems that reduce time spent voting, this calculated value can be used to compare the current costs of roll calls.

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<sup>9</sup> NCSL, *Mason's Manual*, 369-372.

<sup>10</sup> Vermont, "Rules and Orders of the House of Representatives," 18.

<sup>11</sup> William M. McGill (Vermont House Clerk), in discussion with authors, March 19, 2018.

<sup>12</sup> William M. McGill, in discussion with authors, March 19, 2018.

<sup>13</sup> Daniel Dickerson (Vermont Joint Fiscal Office), in discussion with authors, March 1, 2018.

## Roll Call Systems in the 50 States

In 2014, the NCSL updated its 2008 research on state legislative voting systems. Ninety-nine principal clerks and secretaries were surveyed and sixty-seven responses were collected.<sup>14</sup>

Roll calls in legislative chambers may be conducted through manual, electronic, or combination systems. In manual systems, roll calls are conducted through calling out a member's name and recording responses on paper.<sup>15</sup> The same process occurs in combination systems, but these results are also entered into a legislature's bill tracking software.<sup>16</sup> Electronic roll call machines facilitate roll calls by allowing representatives to vote simultaneously through an electronic voting system.<sup>17</sup>

States that solely use electronic voting systems in the House and the Senate include: Florida, Illinois, Louisiana, Michigan, Minnesota, North Dakota, Tennessee, Virginia, and West Virginia.<sup>18</sup> The only state that uses a manual system in both the House and the Senate is Hawaii.<sup>19</sup> In all other states, the House and Senate use either a manual, electronic or combination system.<sup>20</sup> The Vermont House and Senate use a combination system; members' names are individually called and a response is recorded on a piece of paper and put into the Vermont Legislature's website at the same time.<sup>21</sup>

### Two Case Studies of Electronic Roll Call Voting

New Hampshire and Illinois use different electronic voting systems. The New Hampshire case study was selected at the request of Representative Dylan Giambatista (D-Chittenden-8-2). The Illinois case study was selected due to its unique in-house roll call systems. Although Illinois uses an electronic roll call system similar to other states, it uses a self-created and maintained system.<sup>22</sup> In other words, the Illinois General Assembly did not contract out its electronic voting system.

#### New Hampshire

According to Scott Rupp, Information Systems Manager in the New Hampshire General Court, the New Hampshire House of Representatives installed an electronic voting system in 2011. The Senate relies on a manual roll call system.<sup>23</sup> There are currently 400 House seats and 24 Senate seats in the New Hampshire General Court.<sup>24</sup>

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<sup>14</sup> Erickson, "Survey on Voting Machines," 1-67.

<sup>15</sup> Erickson, "Survey on Voting Machines," 1-67.

<sup>16</sup> Erickson, "Survey on Voting Machines," 1-67.

<sup>17</sup> Erickson, "Survey on Voting Machines," 1-67.

<sup>18</sup> Erickson, "Survey on Voting Machines," 1-67.

<sup>19</sup> Erickson, "Survey on Voting Machines," 1-67.

<sup>20</sup> Erickson, "Survey on Voting Machines," 1-67.

<sup>21</sup> "Customer Listing," International Roll Call, accessed March 19, 2018, <http://www.roll-call.com/about-irc/customer-listing/united-states/vermont.aspx>

<sup>22</sup> Patrick Hauser, in discussion with authors, March 12, 2018.

<sup>23</sup> Scott Rupp, in discussion with authors, February 27, 2018.

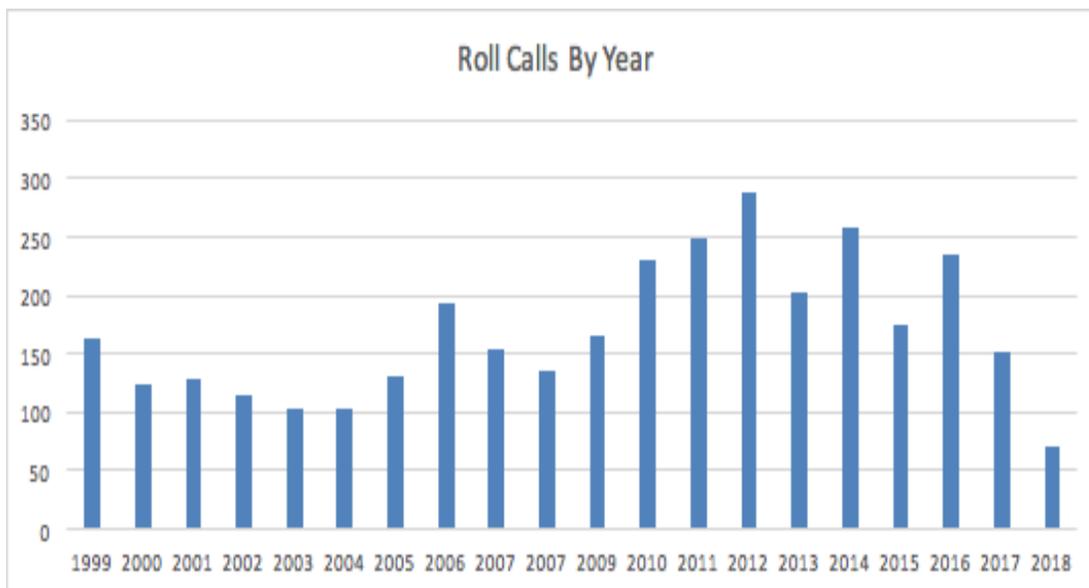
<sup>24</sup> "NH Roster Downloads," New Hampshire General Court, accessed March 12, 2018, <http://www.gencourt.state.nh.us/house/members/rosterdownloads.html>; "New Hampshire State Roster," New Hampshire General Assembly, accessed March 12, 2018, [http://www.gencourt.state.nh.us/Senate/members/senate\\_roster.aspx](http://www.gencourt.state.nh.us/Senate/members/senate_roster.aspx).

The electronic roll call system used in the New Hampshire House was installed by the company International Roll Call (IRC), with its latest software upgrade in 2016.<sup>25</sup> It costs approximately \$500,000 to install and about \$10,000 per year to maintain, with its latest software upgrade in 2016.<sup>26</sup>

The New Hampshire electronic voting system includes a number of integration features. The system can be activated and controlled by House leadership or voting system staff.<sup>27</sup> Members vote through push buttons at their seats, and the results are displayed on screens in the chamber. The operators are also able to use the system to activate a chime in the State House when a roll call vote is initiated.<sup>28</sup> The chime system notifies representatives that a roll call is about to proceed.

In the House, New Hampshire's roll call system allows its 400 members to complete a vote in 30 seconds. Results are displayed immediately when the Speaker updates the display board and are uploaded to the House website within 20 seconds.<sup>29</sup>

Although the New Hampshire House of Representatives experienced an initial increase in roll calls when the system was implemented in 2011, they have since declined. The number of roll calls, as seen in Table 1, peaked at 289 in 2012, but by 2017 had dropped to 152, a figure more closely resembling the 154 roll calls that took place in 2007.<sup>30</sup> In the long term, the number of roll calls in the New Hampshire House of Representatives has not changed in any significant way after the electronic roll call system was implemented.



**Figure 1:** Roll Calls by Year, New Hampshire House of Representatives. Scott Rupp, email, March 1, 2018.

<sup>25</sup> Scott Rupp (Manager New Hampshire General Court Information Systems), in discussion with authors, February 27, 2018.

<sup>26</sup> Scott Rupp, in discussion with authors, February 27, 2018.

<sup>27</sup> Scott Rupp, in discussion with authors, February 27, 2018.

<sup>28</sup> Scott Rupp, in discussion with authors, February 27, 2018.

<sup>29</sup> Scott Rupp, in discussion with authors, February 27, 2018.

<sup>30</sup> Scott Rupp, in discussion with authors, February 27, 2018.

## Illinois

The Illinois Legislative Information System Agency installed an electronic voting system in both chambers of the Illinois General Assembly in 2007.<sup>31</sup> The Illinois Assembly consists of 118 House seats and 59 Senate seats.<sup>32</sup>

The chambers have separate versions of physical hardware (display boards, voting buttons, etc.).<sup>33</sup> Both chambers run the same voting service with slight variations per chamber.<sup>34</sup>

The electronic roll call system used in the Illinois General Assembly was installed by its in-house IT staff. Illinois chose in-house installation to maintain greater control of the voting system. Several specific hardware portions were hired out, including the hardware interface to physical desk buttons and the interface to the audio/video system.<sup>35</sup>

Patrick Hauser, IT support provider for the Illinois General Assembly, estimated the installation costs were between \$500,000 and \$1,500,000, and the software development cost was between \$400,000 and \$800,000. It is estimated that yearly maintenance costs range between \$50,000 and \$150,000.<sup>36</sup> Legislators can request specific software updates to the Legislative Information System staff. Regular replacements of the touch screen monitors and display boards are done internally.<sup>37</sup>

The Illinois system includes a number of features: wired buttons and lights, large touchscreen monitors, display boards, and an audio/video system for microphones and cameras.<sup>38</sup> When the Open vote button is pressed, the building's chime system is activated. The total time it takes to complete a roll call depends on how long the vote is kept open. Near-unanimous votes generally take under ten seconds, but the vote may remain open longer if the vote count is close.<sup>39</sup>

Hauser notes that time was not a factor in the decision to upgrade to an electronic system, saying it is slightly faster, but not significantly. The time it takes to complete a roll call is determined by the legislators.<sup>40</sup> The legislators in both the House and the Senate appear to be pleased with the in-house voting system because changes can be applied quickly without involving a third party.<sup>41</sup>

### Major Providers of Legislative Electronic Voting Systems

Competition among electronic roll call machine providers is mainly limited to two companies, Propylon and International Roll Call (IRC). The oldest provider of electronic roll call machines is IRC. Founded in 1942, IRC is located in Mechanicsville, Virginia and partners with three other

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<sup>31</sup> Patrick Hauser (IT support provider for the Illinois General Assembly), in discussion with authors, March 12, 2018.

<sup>32</sup> "Current House Members," Illinois General Assembly, accessed March 12, 2018, <http://www.ilga.gov/house/>; "Current Senate Members," Illinois General Assembly, accessed March 12, 2018, <http://www.ilga.gov/senate/>.

<sup>33</sup> Patrick Hauser, in discussion with authors, March 12, 2018.

<sup>34</sup> Patrick Hauser, in discussion with authors, March 12, 2018.

<sup>35</sup> Patrick Hauser, in discussion with authors, March 12, 2018.

<sup>36</sup> Patrick Hauser, in discussion with authors, March 12, 2018.

<sup>37</sup> Patrick Hauser, in discussion with authors, March 12, 2018.

<sup>38</sup> Patrick Hauser, in discussion with authors, March 12, 2018.

<sup>39</sup> Patrick Hauser, in discussion with authors, March 12, 2018.

<sup>40</sup> Patrick Hauser, in discussion with authors, March 12, 2018.

<sup>41</sup> Patrick Hauser, in discussion with authors, March 12, 2018.

companies, Daktronics, Televic, and Primus, for hardware and software. According to IRC, in 2009, 44 states had purchased its patented software or contracted them for installations of display boards and/or voting systems.<sup>42</sup> Vermont was the first state to purchase IRC's latest version of "xmLegislator," a legislative management software that operates in tandem with IRC's ".NET" voting software for voice votes.<sup>43</sup>

Propylon, a competing company, offers similar services in legislative management software but does not provide display board or voting system hardware. Instead, the "Legislative Workbench" software is accessible on personal, secure tablets.<sup>44</sup> Propylon was founded in 1999 in Ireland and supplied the House of Oireachtas with its first electronic drafting system, "Parliamentary Workbench."<sup>45</sup> In 2005, Propylon began operating in the United States with a contract for Pennsylvania's legislature. Since its introduction in the United States, legislatures in Kansas, North Dakota, Indiana, Michigan, Ohio, and Montana have also contracted with Propylon for software.<sup>46</sup>

### **Features of Electronic Roll Call Voting Systems**

According to the NCSL, electronic roll call systems aid legislators in expediting their work because they transfer, store, and publish voting data without requiring an individual to re-enter this data.<sup>47</sup>

Voting machines are most commonly installed at each member's desks, but they can also be positioned at different locations within the chamber. To increase the security of these systems, some are now programmed to function with a representative's personalized voting card.<sup>48</sup> To promote further security measures, New York and Oregon use fingerprint recognition software to activate the voting system.<sup>49</sup> Wireless voting systems are less common. IRC offers a Televic Conferencing System with wireless voting technology.<sup>50</sup> Propylon specializes in wireless roll call systems through their tablet-based voting products.<sup>51</sup>

Most chambers use display boards in varied capacities. Display boards are most often used to advise the members on the reading of a bill, the order of business, or a running or final vote total.<sup>52</sup> Because display boards can detract from the historical decorum of chambers, some legislatures have invested in creative measures to allow the display boards to be disguised or hidden when not in use. As of 1996, eight chambers reported using display boards that retract into the chamber wall

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<sup>42</sup> "Customer Listing," International Roll Call, accessed March 19, 2018, <http://www.roll-call.com/about-irc/customer-listing/united-states.aspx>.

<sup>43</sup> "Products-Legislative Management," International Roll Call, accessed March 19, 2018, <http://www.roll-call.com/products/legislative-management.aspx>.

<sup>44</sup> Propylon, "The Propylon Story Through Key Points In Time," accessed April 2, 2018, <https://www.propylon.com/propylon-story-key-points-time/>.

<sup>45</sup> Propylon, "The Propylon Story."

<sup>46</sup> Propylon, "The Propylon Story."

<sup>47</sup> Erickson, "Roll Call Voting Machines," 19-37.

<sup>48</sup> Erickson, "Survey on Voting Machines," 1-67.

<sup>49</sup> Erickson, "Survey on Voting Machines," 1-67.

<sup>50</sup> International Roll Call, "International Roll Call introduces Televic Wireless Voting Conference System," accessed March 22, 2018, <http://legisweb.state.wy.us/InterimCommittee/2014/5-ElectronicVotingShortReport.pdf>.

<sup>51</sup> Propylon, "The Propylon Story."

<sup>52</sup> Joy Hill, "Short Report: Electronic Voting," (Cheyenne, Wyoming: Wyoming Legislative Service Office, 2008), 1-79, accessed March 29, 2018, <http://legisweb.state.wy.us/InterimCommittee/2014/5-ElectronicVotingShortReport.pdf>.

when inactive.<sup>53</sup> IRC also advertises the possibility of displaying artwork within a framed display when the board is turned off for aesthetic purposes.<sup>54</sup>

The costs of these features vary from state to state. Estimates should be comparable between state legislatures of similar size. Maine's 151-member House of Representatives is a similar size to Vermont's 150-member House of Representatives. Maine uses an electronic roll call system that costs \$20,000 per calendar year. The installation of this system for both the House and Senate in 1994 cost \$310,000.<sup>55</sup> The New Hampshire House of Representatives, with 400 members, installed an electronic system for \$500,000, with annual maintenance fees of \$10,000.<sup>56</sup> Both of these systems were installed by IRC.

### **Pros and Cons**

Electronic roll call systems cut down on the time-consuming practice of traditional roll calls. This can allow legislators to focus on other issues and tasks at hand and reduce the time dedicated to administrative tasks associated with roll call votes.

Some clerks have commented that states have witnessed a significant upturn in the use of roll calls after the electronic roll call system was installed, with some states reporting a five to six percent increase in roll calls per session.<sup>57</sup> This makes the justification of electronic roll calls as time and money saving investments weaker. This trend does not apply to every state, as highlighted by New Hampshire's recent roll call trends.<sup>58</sup>

Clerks have also reported issues with a lack of debate on the floor after the implementation of electronic roll call systems. Based on these clerks' observations, legislators may be choosing to put bills to roll call before sustaining sufficient deliberation. Electronic roll call systems also require periodic updates and replacements.<sup>59</sup> Depending on the system, these upgrades vary in cost.

### **Conclusion**

There are many options the Vermont General Assembly could pursue to change the state's current roll call system. Like many states in the country, Vermont could upgrade to an electronic roll call system. With at least two companies that offer customizable services, there are a multitude of features the Vermont General Assembly could choose to install. These features may improve the speed of roll call voting, which could have potentially positive and negative implications for the legislature. If such time savings were realized, that could mean reducing session length and increasing the time legislators have to research, draft, and debate legislation and to interact with constituents. But the costs associated with installation of electronic roll calls are substantial, and although potentially cost-effective in the long run, implementation would require a large initial investment and potential changes to the State House's physical infrastructure.

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<sup>53</sup> Erickson, "Roll Call Voting Machines," 19-37.

<sup>54</sup> International Roll Call, "Paint or Pixels? Concealing LED Displays in the Chamber Environment," accessed April 2, 2018, <http://www.roll-call.com/what's-new/march-2015/paint-or-pixels-concealing-led-displays-in-the-chamber-environment.aspx>.

<sup>55</sup> Rob Hunt (Maine House Clerk), in discussion with authors, March 19, 2018.

<sup>56</sup> Scott Rupp, in discussion with authors, February 27, 2018.

<sup>57</sup> Discussion with State House Clerks, March, 2018.

<sup>58</sup> Discussion with State House Clerks, March, 2018.

<sup>59</sup> William M. McGill (Clerk of the Vermont House of Representatives), in discussion with authors, March 19, 2018.

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This report was completed on April 27, 2018, by Rosie Contompasis, Erin Thorndike, and Eric Tucker, under the supervision of Professor Jack Gierzynski and Professor Robert Bartlett with the assistance of Research Assistant Lauren Rayson in response to a request from Representatives Dylan Giambatista and James Harrison.

Contact: Professor Anthony "Jack" Gierzynski, 534 Old Mill, The University of Vermont, Burlington, VT 05405, phone 802-656-7973, email [agierzyn@uvm.edu](mailto:agierzyn@uvm.edu).

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